THE

Southern Agriculturist,

AND

REGISTER OF RURAL AFFAIRS;

ADAPTED TO THE

SOUTHERN SECTION OF THE UNITED STATES.

VOL. II.

FOR THE YEAR 1829.

By J. D. LEGARE, Editor,

CHARLESTON:
PRINTED AND PUBLISHED FOR THE EDITOR, BY A. E. MILLER,
No. 4 Broad-Street.
1829.

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THE

SOUTHERN AGRICULTURIST.

JANUARY, 1829.

PART I.

ORIGINAL CORRESPONDENCE.

ART. I.—*On the necessity of Agricultural Education, being bestowed on those intended for Superintendants of plantations, and the benefit which would arise from proper encouragement being held out to respectable youths, to engage as such; by a Well-Wisher to Agriculture.*

[COMMUNICATED BY THE SOUTH-CAROLINA AGRICULTURAL SOCIETY.]

Gentlemen,—The zeal and energy which have been exhibited by your respectable body, as regards every thing connected with Agricultural improvements, emboldens me to address you, trusting, that what I may offer to your consideration may not be considered as emanating from a want of respect for yourselves, or as intrusion on your time and attention. Things in themselves apparently trivial, have often given rise, from exciting inquiry, to the most important consequences, and could I elicit in the subsequent remarks the wisdom and experience of many of your members, I have no doubt many useful and important results might ensue.

The Patriot, in contemplating the progress of our extended country, must look with anxious attention upon the Agricultural interests, for in them, in a great degree, depend the wealth and strength of the country and the happiness of its people; and we, especially, in the South must be sensibly alive to every thing connected with Agriculture.

It has been a matter of serious concern that with us, possessing so much land, and the cultivation of this land in a

climate well calculated for the growth of such a variety of valuable products, the Agriculturist should so often be embarrassed—and property which should yield comfortable subsistence become expensive and often ruinous.

It must be interesting then to inquire into some of the causes of this state of things, and the probable means of preventing it.

The principal cause of failure arises from an ignorance, generally speaking, in Planters, and the Superintendants of plantations, of the principles and science of Agriculture. Throughout a great portion of our country, we discover immense bodies of land deserted, and we are told that they have proved the ruin of those who cultivated them; and how many settled plantations are left almost wholly to chance for the attainment of a crop? Could not many of these lands be greatly improved and made profitable, and could not occupied lands be much enhanced in value?

In the formation of a successful Agriculturist, many things are indispensably necessary. He should have a thorough knowledge, practically, of the different qualities of soils, and the best means of improving them. He should be well acquainted with the general principles of mechanics and mechanical philosophy, so that he might arrange hi sland properly, and be enabled successfully and economically, to drain or supply them with water. The theory of vegetation and the causes which retard or promote it, are, you must be sensible, all important. These are the elements which should be studied by every person wishing to become an Agriculturist. A thorough knowledge of these will admirably prepare him for that practical knowledge which experince and observation alone can give. The mind will then be governed by just principles, and every experiment or improvement, in place of being suggested and executed upon mere speculation, will be founded on philosophical and practical data. Thus gradual and successful improvements will be made, and the product of the soil be abundant, and reward the honorable labour of the Agriculturist.

But what is our present condition? Are not the majority of those who call themselves Planters, ignorant of the first principles of Agriculture? Do they not want system, arrangement and economy? Does their income prove any thing proportionate to the capital and labour employed? Do they not, in short, trust almost wholly to nature, and

neglect the power and assistance of art? Nature, so bountiful to us, cannot forever serve; she must be assisted by art or she will fail to give that abundant supply which a state of cultivation requires. But how can this be otherwise, when we discover the facility with which individuals become planters. All other departments of knowledge require particular attention, but this, it is imagined can be intuitively obtained. We observe young men, fresh from their Academical studies, where their attention has been directed to abstract principles, and who are entirely ignorant of the practice or theory of Agriculture, enter immediately upon the duties of the Planter: thus making a sudden change in all their habits of thinking and acting. What frequently results from this arrangement—Do not the major portion get disgusted with the drudgery and details of Agriculture, so opposite to their previous habits—neglect it, and devote that time which should be occupied in Agricultural concerns, to idleness and dissipation, thus becoming lavish in their expenditures in the ratio of the diminution of the product of their property—? Do not those who are disposed to be attentive to their plantations—either from ill-arranged experiments; from ignorance of the principles and details of Agriculture and rural economy, or of the character and management of their labourers, become embarrassed, and frequently ruined? There are innumerable cases of this kind, and the evil is progressing to an alarming degree.

Too many of our Planters, from this cause, do we discover in debt and deprived of many of the luxuries of life, and the means of promoting the useful institutions of their country. Too many do we see with a handsome competency die, and leave their family in penury and want. These are serious and distressing evils, which are every day presented to us, and which call loudly for the patriotic efforts of the Agriculturist, if possible, to correct.

But it will naturally be asked, how are the evils to be remedied:—

The only methed, I reply, by which these evils can be corrected, and the experiments for the improvement of Agriculture, can prove in any manner beneficial, will be, to educate young men, professedly, for Agricultural pursuits—place them at this duty, at an early age, and let them go through all the drudgeries and duties connected with the profession. Young men would then know how to take care of

and manage their patrimonial estates. But another and still more important advantage may accrue. There are as great number of Planters of limited means, who have many sons living in the country, and prefer a country life. Let them be educated, so that they may pursue Agriculture as a profession, and become the Superintendants of plantations. You would, by this means, get an intelligent, honourable and trust-worthy class of men emanating from your friends and associates, to superintend and protect your property; who would regulate your labourers, and improve and conduct your Agricultural concerns faithfully during the summer, the most critical period of your crops.

If this plan could be carried into operation, it would be the most salutary and efficient means of elevating the character of the Agriculturist, drawing many young men from idle and dissipated, to industrious and economical habits—diffusing intelligence, industry and improvement through our country, and converting a class of men (I mean Overseers, as they are called), from being ignorant and undeserving of confidence, into intelligent, valuable and industrious citizens, not only respectable, but adding respectability to their country. These important revolutions, will be the consequence of immense improvements in Agriculture, and no portion of our diversified soil but will be adapted to some useful and important species of cultivation. But it may be anwered, that although the plan is feasible, it is not practicable; that, although those possessing plantations might benefit in a small degree, we never could create a a class of Superintendants of that class of individuals just mentioned.

I am sensible that an Overseer is looked upon in an odious light, and too many of our countrymen would prefer to lead a life of indolence and inactivity than pursue this avocation.

Conducted as things now are, we cannot wonder at their aversion. Our Planters have been too much in the habit of employing low and uneducated men to superintend their property, whom they could not respect, and thus have rendered the occupation degrading. But let us consider this matter; it is of the highest importance, and deserving of your serious attention.

All professions, it will be granted, are honorable in themselves, and are only made otherwise by the individuals who

compose them. We respect the Lawyer, the Physician, the Factor, the Merchant, the Mechanic, and why not the professional Agriculturist? Why should he who directs the improvement of your soil, and the cultivation of it, be less respectable, than he who sells the product of that soil? There can be no just reason for this. It is true, you cannot respect the men you at present employ. But it is a matter of astonishment, that on account of a few hundred dollars, you will leave your whole property in the hands of ignorant men, whom you cannot respect, and in whose Agricultural attainments you have not the slightest confidence.

Would you not regard the Merchant who employed an ignorant man as his head clerk, deserving of those embarrassments which such a procedure would necessarily ensure? And yet in your department, you are constantly committing this error. To correct this growing and serious evil, young men should be encouraged to pursue the study of Agriculture, and undertake it as a profession. The undertaking can be made respectable. Patronize and encourage young men of industry, give a tone to the pursuit, and you will rapidly command those of talent, industry and merit, as superintendants of your property. But it has been said that the pride of a respectable Carolinian cannot submit to so degrading an occupation. This is a false pride which it rests with you, and you alone to destroy. Convince him by your countenance and support, that he is pursuing an honorable occupation, useful and important alike to himself and his country. Let him learn the important lesson, that true pride conceives nothing degrading, which does not infringe upon virtuous and honorable principles. That the character and respectability of a person are to be estimated by his moral excellence, and not by his pursuit. Infuse into his mind the just principles that he is nobler, and deserves infinitely more the esteem and respect of a community, who, by his industry and exertion, honestly raises himself to affluence and respectability—than he, who receiving it as an inheritance; leaves, too often, to his descendants poverty and, pride. It should be the endeavour of all good men, who delight in the prosperity and glory of a country, to subvert all principles which militate against it, and what can militate more powerfully against the rising greatness of a country, than the influence of a false pride, which contemns the honorable and laborious occupations of life, and would pre-

fer indolence and poverty, or a miserable dependence. In every country, knowledge must be considered as the basis of her prosperity and glory. The people must look to themselves for success in life. Possessed of good educations and industrious and economical habits, and they will be prepared to go into the world, and become valuable members of society.

They must be taught to feel no pride, but the pride of honorable success. This is an important principle every where. In a republican government, where no aristocracy is supposed to exist, but the aristocracy of merit—it is *imperative.*

I do not mean to disparage my countrymen. No one can admire more than I do their many honorable characteristics. But false pride is unfortunately the rock upon which too many of them split. Who of us can look around and see how many families have fallen in their descendants, from false pride and its concomitant indolence, without tears of sorrow or remorse.* It is for you, gentlemen, to remove this barrier by showing, by your conduct towards those, who become Superintendants of your plantations that you regard the profession honorable, and you will quickly find it become so, from the character of those engaged in it. If you could effect this revolution in the character and intelligence of the Agricultrist, you would do more for the protection and prosperity of Carolina than any other means I know of. Of what avail are your premiums for improvement in Agriculture, or all your other efforts, if the palpable and glaring evils which I have pointed out, continue to exist. You will not think me presumptuous I hope in being thus plain, we all, I am sure, feel that the only means by which we can maintain our proper station in the Union, is by our moral and intellectual excellence. Diffuse intelligence through every class and character of our citizens, and a bulwark impregnable to all aggressions or oppressions will be found. Carolina, always distinguished in the nobler virtues of the heart, is now emulating her sister States in the attributes of mind. She now can instruct her sons in almost all branches

* How often do we hear young men say, they would not condescend to certain things connected with their business, which contain nothing dishonorable, but which their false pride tells them is not gentleman-like. We are, in truth, too apt to be above our business, and this is the reason why strangers excel us, even in our own homes.

of education : and in the progressive improvement you cannot, nor will you be quiescent. This is an important era in our Agricultural history—energy and enterprize now animates you. We may look forward, with patiotic ardor and enthusiasm to the immense consequences and multiplied blessings which may flow. You have done much, but you have only laid the corner stone of your future, I trust, splendid edifice.

(To be continued.)

ART. II.—*On dyeing blue from the Indigo blant, and the cultivation and manufacturing of Madder, &c.*

[COMMUNICATED FOR THE SOUTHERN AGRICULTURIST.]

New-York, October 5, 1828.

Mr. ELIAS HORRY,

Dear Sir :—Yours of the 8th ult. was duly received, informing of a box of indigo leaves being forwarded by brig Coral, at the suggestion of Mr. George S. Gibbes. I am much pleased at the receipt of these; but must inform you, that less than half a ton of leaves will not enable me to give a fair trial on a large scale. I have tried the experiment on a small scale, and am desirous of experimenting, this fall, on a scale of sufficient magnitude to place the result beyond a doubt. It is my intention, should the result be favorable, to divide the patent right into one hundred shares, holding only one-tenth myself, and divide the other ninety among such planters as may join in the object. I presume you are aware of the object (to make indigo plant answer in blue dyeing for both woad and indigo), and you must be aware that the magnitude of the undertaking will be fully equal to all that one hundred of the largest planters can produce, confining the supply to American consumers alone.

I presume that Mr. Gibbes has informed your society of the result of his inquiries when in New-York last year, relative to manufacturing indigo, having heard, by a gentleman from Georgia, that valuable aticles on the subject have appeared in the Charleston agricultural reports. The old process of making indigo, was to cut the plant green from the field, and steep it in vats, where it was permitted to fer-

ment, drawing the liquor off into a receiver, and there, by agitation, to cause the colouring feculæ to combine with the oxygen of the atmosphere. The colour when fallen down, was taken and run into moulds and dried. In this state it was sent to market. In the process described by Mr. Dalrymple, as pursued in the East Indies. The leaves of the plant are dried, a nd the colouring matter extracted by warm water. In the process pursued in this country, there are two points, on the successful performance of which the whole value of the article will depend. First, on the degree of fermentation given to the plant; should this not be carried far enough, much of the colouring matter would be lost, and if carried too far, the whole would be injured. Secondly, when the liquor, after it is drawn from the steeper, do not attract sufficient oxygen to raise the colouring feculæ to a proper standard, the indigo will have a greenish hue, and its value materially lessened; and if too much oxygen be absorbed, it will have a white mealy appearance still more injurious than the former defect; for indigo, in its last stage of oxydizement, becomes white, and this, by no subsequent process, can be made to produce colour, its capacity for dying being lost.

There are two modes of dying blue—One by fermentation, the other by mixing the indigo with a material having a greater affinity for oxygen than the indigo has. The former is used for woollen and silk-dyeing, the latter for cotton and leather. A fermenting vat for woollen is usually made with woad, bran and madder, and the degree of fermentation is usually regulated with lime—this is called the woad vat. There is another mode of blue dying by a warm process, called the indigo vat. This vat is fermented with bran and madder only, and the fermentation is regulated with potash. The latter mode is less difficult for the operator, but do not afford such good colours as the woad vat. In the cold vat, four pounds of indigo, ground fine, are put into a vessel of water with eight pounds of copperas, and ten of dry slacked fresh burnt lime. The lime combines with the sulphuric acid of the copperas, and throws down its black oxyde of iron. The black oxyde of iron being in a minimum state of oxydizemen, and having a much greater affinity for oxygen than indigo has, absorbs the oxygen of the indigo, and brings it back to a green state, or into the same state it was when drawn from the steep before the feculæ

was made to assume a blue colour by agitation. In the fermenting vat the Indigo is also brought back to a green state, and it is only in this state it can be made to produce a permanent colour. The colours must come from the vats of a bright green hue, and by exposure to the atmosphere reabsorb oxygen.

When your Indigo-makers draw off the green liquor from the vessel in which the plant has been steeped, if they were to add sufficient caustic dry slacked lime to prevent the fermentation from progressing further, and no more than sufficient, the colour obtained from that liquor would be better, more permanent, and more brilliant, than can be produced by any subsequent process. This has been done by the Africans, by a mode unknown to us, and no European artist can equal their colours. This is the process I wish to establish, having discovered a mode by which it can be performed; but as my trials have all been on a small scale, and the African dye being from all accounts on a small scale, and knowing from experience that, that which often performed successfully on a small scale, will not always answer on a large one, I am desirous of making an efficient trial as soon as possible, so as either to establish the fact, or resign all pretentions to it. You cannot but be aware, that should it eventuate successfully, the object would be of immense magnitude to the undertakers, and of great profit to the country. It would enable our Planters to supply the whole of this market, and much of foreign consumption. It would create an immense amount of freight for our ships. It has been objected, that the expense of transit would be more than equal to any advantage to be derived from it; but those who make the objection cannot be aware of the advantage. If the Indigo plants contains five per cent of colouring, i. e. one hundred pounds to two thousand pounds of the plant, the saving to the raiser, between merely dyeing and making it into Indigo, would be more than equal to the difference of freight. But this is not all the advantage: every two hundred pounds of Indigo requires eleven hundred and twenty pounds of Woad to work it, which in England is worth $52, and in this country $70. When the Indigo plant is used it answers both for Woad and Indigo. There is, in my opinion, but little doubt, that any given quantity of Indigo plant will afford more colour when worked by my process, than when fermented by the Indigo-makers. Mr. Dalrymple

thinks not, as he had fermented the leaves a second time, and found no colouring matter in them. This is what a blue dyer would expect, for if the fermentation of a vat be pushed beyond a certain point, so far from any fresh colour being developed, that which previously existed would be destroyed.

You request information respecting *Madder*, which I give with pleasure as far as I am acquainted with the cultivation. The consumption of Madder is rapidly increasing in this country. I presume that not less than one thousand tons are annually sold in this city. In the last four weeks we have bought and sold rising of twenty tons. Much pains have been taken to induce the English farmers to raise Madder; and considerable quantities have been planted by them in the counties of Norfolk and Suffolk. When in Kentucky, I observed several beds in the gardens of wealthy Planters. You will find directions for planting and raising Madder in the English Encyclopedia. It appears from those directions, that they plough the land deep, and harrow it well, in the fall of the year, and then cross plough and harrow it again, in the spring. In Kentucky they cultivate it by spade husbandry, digging below the surface, planting it in narrow beds, and covering up the shoots semi-annually, till the third or fourth year. They then dig the whole up, and transplant such roots as are either too small or too old for use. By referring to the latest English Encyclopedia you will obtain a knowledge of the European method of cultivatin it. To succeed well with Madder—it is absolutely necessary that the beds be kept perfectly clear from weeds. In France and in the Netherlands, it is raised on sandy soils, in which it is said to succeed the best.

When Madder is raised for domestic use, it may be taken up as wanted, using four pounds for one of the manufactured. When raised for a distant market it will have to be dried and ground. It is dried in a close stove at a given temperature. The drying and grinding is a separate business from the cultivation. The cultivator raises the root, digs it, and sends it to market, where it is purchased by the manufacturer. When dried and ground it is sifted, and the different siftings, constitute the different qualities. There are four grades of Madder—the mull, the gamene, the ombre and the crop: and in each grade there is a great range of qualities. This is the usual mode of sending the article to

market, but there are some exceptions. Much of the French Madder has been imported into England in the root, and the drying, or rather stoveing the root, has been performed in London, as well as the grinding. The Madder which comes from Smyrna is also imported in the root, and is valued above any other. It would, therefore, not be necessary, should you raise it in the Southern States, to run any risk, or incur any expense in grinding; but it would be essential that you should seek information, either through the medium of the American Consul or some other citizen at Smyrna, of the particulars of the process which is there pursued in drying and packing their roots. The Smyrna Madder-roots are worth from 13 to 15 cents per pound, when the average value of the qualities of French and Dutch is only 11 cents.

Madder is used for a great variety of colours, in fact it enters into the composition of nine-tenths of all the colours dyed. Flannel reds, are altogether dyed with Madder—so is Turkey-red on cotton. It is a component part in browns, olives, bottle-greens, drabs, oranges, &c. and is used to a limited extent in blue dyeing.

Next to the defect in manufacturing of Indigo, is the manner in which it is sold in our markets. It is usually sold by commission merchants, who have no knowledge of its consumable value. The following instance will go to prove the loss our raisers of Indigo often sustain by ignorant or necessitous agents. Having been a large consumer of Indigo in England, and it being known by your consumers in this country that my judgment in the consumable value is superior to others, I am employed to buy for many of the largest consumers at 1 per cent commission. Among others I buy for Mr. Benjamin Marshall, who consumes in Calico-printing about $20,000 annually. Last year I was offered a lot of twelve hundred pounds of a good Indigo made either in South-Carolina or Mississippi, for which I offered 10 shillings* per pound if the holder would wait three days, the period at which Mr. M. would return to the city. The day after my offer was made, the commission merchant sold it for 6 shillings† per pound, and the person who bought it, sold it again for 12 shillings‡. Here was a loss sustained of 66 per cent, and entirely owing to either a want of capital, or to a want of a knowledge of the real value of the arti-

* Equal to $1 25 cents. † 62½ cents ‡ $1 50 cents.

cle. Our firm is Partridge & Colgate, 10, Gold-Street, and though we are not in the habit of selling on commission, we would be willing to sell for any of your Indigo growers and to make advances on the article, of at least half its marketable value.

There is another article wanting by our Woollen Manufacturers, that could be raised profitably in the Southern States, which is Rape-seed for oil. Every twenty pounds of wool requires at least five pounds of oil before it can be carded or spun, and the rape oil is generally used for all coarse goods in Europe: We have no oil of the kind in this market. From the frequent inquiry made for it, I presume that three or four hundred pipes of 120 gallons each could be readily disposed of in this city at 50 cents per gallon. From calculations made by foreigners in New-York it would pay better than any other agricultural product at 40 cents. Should thec limate of your State answer for raising, it could not fail of being a valuable product.

I have given you some general information relative to Indigo, Madder, and Rape-seed oil. Should you be desirous of more particular information you will please solicit it, as I make a point of laying out the whole of my leisure hours in promoting the arts and manufactures of this country.

Madder is the only ingredient in the whole materia tinctoria that affords a permanent red colour. It contains two colouring matters, a yellow and a red; the yellow does not appear till at a boiling heat, for which reason, when reds are dyed with madder, the liquor is never permitted to boil. If animal matter, more particularly wool, the goods are previously prepared in a separate liquor with allum, crude tartar, and a small quantity of nitro-muriate of tin, in which they are boiled for two or three hours. The red is added in a separate liquor, made clean by boiling a bran bag in it—the Madder is put into liquor at about 170° Farenheit, and the goods entered. The fire is then gradually increased, till the liquor becomes about 210° Farenheit, when the fire is drawn, and the process continues till it lowers fifteen or twenty degrees. If the Madder used be of fine quality, the colour will be rich and beautiful. When a greater degree of beauty is wanted, about one ounce of Cochineal to five pounds of the stuff dyed is added in the preparation liquor, which will much improve it.

The Madder-roots I sent to Mr. Gibbes, I am informed have grown, and in another season they will afford succors and roots for planting an acre or more. It would probably be too tedious to wait for plants from that supply; if so, any quantity can be obtained through the medium of our Consuls in the port nearest to the madder district, and probably, information relative to raising, curing and grinding, could be obtained from the same source.

I am, Sir, your's respectfully,

WM. PARTRIDGE,

10, Gold-Street.

ART. III.—*On the Cultivation of the Wild or Native Grape Vine.*

To the EDITOR of the "SOUTHERN AGRICULTURIST."

"Fairview, June 13, 1828.

Dear Sir,—There is a deplorable want of agricultural science, energy, and enterprize among the inhabitants of the South. For nearly twelve months past, I have been endeavouring to procure the establishment of an Agricultural Society, hitherto without success; but a spirit isawakening which may lead to good results. Perhaps the excitement occasioned by the passage of the Tariff Bill, may do more than all the reasoning that knowledge or experience could suggest. The apathy and indifference prevailing on all subjects of agricultural improvements and experiments is extraordinary and can certainly be ascribed to nothing but indolence and the facility with which money could be made some time back by the Cotton culture. The decline of that article will I hope be productive of the good effect of weaning us from it and compelling us to resort to something else as an object of culture, which may be less engrossing and less destructive to our lands. Since I have received *the Agriculturist*, several have determined to subscribe for it, and its reputation is rapidly increasing. If you could publish such

parts of the report of the Secretary of the Treasury as relate to the growth of the Mulberry, the rearing of Silk Worms, and the manipulations and management of Silk, it would doubtless be acceptable to the public. This part of the State is well adapted to the culture of the Vine and the growth of Silk. A few persons are beginning to make them objects of attention. I have made a feeble attempt to establish a Vineyard, and my attention has been chiefly directed to the native grape; which I think may be cultivated to great advantage. My own lands and the neighbourhood abound in varieties of them, of which some are excellent of their kind. The unequal ripening and rotting of most of the foreign grapes, have hitherto been a great obstacle to their cultivation. Experiment may show that this is owing to soil and unskilful management; but if correct conclusions can be drawn from the habitudes of the wild vine in its native state, I am induced to believe that it will ripen well on any soil and bear any mode of training that the taste or fancy of the cultivator may suggest. I have found it as well ripened within a few inches of the ground, as when running on the trees of its native woods; and, in some instances, more loaded with fruit.

The quantity of Wine to be made from it, will doubtless much depend upon the soil on which it is cultivated. It was not in my power to do more this season than to set out a few cuttings and graftings of the Vine, and the late frost and severe drought which have prevailed here, have, together, destroyed half of them; but the ensuing winter I intend to plant considerably of the Mulberry and of the Wild and Madeira grape. This I intend to do in such situations as are or will be worn out and washed, and rendered unfit for common cultivation. It may be done without materially interfereing with an ordinary crop, and if successful, will tend to bring into action some of our much abused and worn out lands. Much of the surface of our country is uneven and some of it very broken. Such parts of it as are liable to be washed away by our violent summer showers, might be thus profitably employed, and the breast of the hills and leveler lands be reserved for farming.

The Southern States have been engaged in much argument and angry discussion on the subject of the policy of the general government. Whether such policy be wise or unwise, I think we discover but little wisdom in spending

our time in idle debate, in threats of disunion, and in persevering in a culture which exhausts and ruins our soil, and must, to a considerable extent, be ultimately abandoned. We have a variety and abundance of resources if rightly and judiciously employed, to ensure our comfort and prosperity. We must use them or expect to decline in wealth and prosperity. I am in hopes a spirit of inquiry will awakenth—at we will establish Manufactures among ourselves, and that a variety of objects of culture will succeed to the all-absorbing cultivation of Cotton. When this takes place, I think we may expect a reflux of the tide of prosperity: and till it does take place, we shall be but the overseers and tributaries of the industrious and enterprising capitalist, be he situated where he may. My agricultural means and experience are both but limited, but, as far as I am able, I will contribute to the success of your publication and to the spread of agricultural knowledge.

Very respectfully, yours, &c.

WM. ELLISON.

ART. IV.—*On the utility of the Pride of India, in preventing the depredations of the Cut-Worm, among Vegetables, &c. by* WILLIAM BLACKLEDGE, Esq.

"Newbern, (N. C.) July 8, 1828.

Dear Sir,—The pleasure as well as information derived from reading the first five numbers of your valuable work, induce me to wish to become a subscriber, and herewith you will receive five dollars, the amount of the first year's subscription. And to show you, as feeble as I am, my willingness to contribute my mite to its usefulness, I make you at the same time, a communication on the valuable uses which may be made of the Pride of India, by the Planters and Gardeners, which if you think worthy of publication, you can insert it in one of your subsequent numbers.

John Gray Blunt, jun. Esq., of Washington, (N. C.) one of the most intelligent as well as enterprising of our Planters, from noticing the aversion of the whole insect tribe to what we call the Pride of China, (you the Pride of India,) conceived the idea, that a strong decoction of either the roots or berries of that tree applied to his Cabbage plants in the garden, would prevent the destructive effects of the Cut-Worm. Accordingly, after having one square entirely annihilated, he had it replanted—made him a decoction of the berries of the Pride of India, very strong, by macerating the berries in hot water, and applied one table spoonful to each of the plants, except five of six rows. Every plant in the rows to which none were applied, were again destroyed by the Cut-Worm ; whilst not one in a hundred of the others were touched. Seeing the beneficial effects of this decoction, as applied to his Cabbages, he immediately had another strong decoction made, in which he steeped some Corn, and planted it on a piece of ground, where the Cut-Worm had destroyed the first planting. Its effects on the Corn was almost equal to that on the Cabbages. Profiting by his example, and being very much annoyed not only by the Cut-Worm, but also by crows and blackbirds, I adopted his plan, with this addition, on my Corn. My seed Corn being ready, and the ground being prepared to receive it the next day, I poured half a bushel of Corn into a vessel which would hold water, and not being able to get a sufficiency of the berries, I dug the root of the Pride of India sufficient to make a large tea-kettle full, of strong decoction, of it. Having a kettle full of the decoction boiling hot, I next poured on top of the Corn, a half pint of clear tar: more than that ought not to to used to that quantity of Corn. As soon as the tar is poured on, a hand stands by with the kettle of the decoction, boiling hot, and pours it on the tar as fast as he can, through the spout of the kettle. Another stands by with a hand-spike, of the size of the wrist, and stirs the Corn as fast as he can, until he discovers that every grain is glazed with the tar. The vessel is suffered then to stand until the morning, for the Corn to absorb the liquid. It is then rolled in ashes, or lime, if we have it; if not in common sand, and planted. When ever I have been able to have the Corn thus prepared. I have suffered very little either by the Cut-Worm or birds. Would it not be very useful to gather the leaves and berries of this tree, and put them

around the roots of our damson and green-gage plum, and peach trees. The experiment is certainly worth making. The best bearing green-gage I ever saw, and the one which most frequently bore fruit in our climate, was planted in a yard perfectly shaded by these trees.

I remain your well wisher,

WM. BLACKLEDGE.

Newbern, July 8, 1828.

Note, by the EDITOR.

It has long been known to our Planters, that a decoction of the root of the Pride of India, was a most powerful vermifuge; it has been long used as such on our Plantations, with effect, among our Negro children. Although well aware of this, yet we believe few have ever used it as a preventative against the depredations of the insect tribe in either their gardens or fields. Immense quantities of our Corn are yearly destroyed by the Cut-Worms, and we are, often obliged to replant several times. The birds, also, are great annoyances, and destroy much. Tar alone, as a preventative has been tried, and although with some success, yet has not been considered as effective. The plan pursued by Mr. Blackledge, has been successful with him, and ought to be adopted by our Planters generally. To our Gardeners, who annually lose many of their young plants, the decoction here recommended will be invaluable. We have known beds of lettuce plants nearly destroyed by worms: all of the larger leaves eaten off, and only the heart-leaves left. We have seen these same beds entirely freed from the worms, by being watered with an infusion of the leaves of the Pride of India, made by filling a tub full of the leaves, pouring water on, and permitting it to remain a day or two. The effect was almost instantaneous, and these beds afterwards produced fine plants. There are many other uses to which the berries, leaves and roots of this tree might be applied; and we shall be glad to hear from any of our friends of any experiments they may have made with them.

ART. V.—*On the propriety of introducing Cotton into more general use on our Plantations, and Manufacturing the Waste Cotton into Rope for baling of Cotton Bags; by* AN OBSERVER.

"Camden, May 10, 1828.

Dear Sir,—I send you two papers containing communications that I trust you will think sufficiently interesting to the community, to entitle them to a place in the columns of your useful Journal. A desire to see how far the recommendations contained in them were supported; by subsequent experience has induced close attention and observation, and, as the result of it, I would say, so far as respects sheep, the produce has been greater, the expense of keeping less; but the yield of wool also less, which I attribute entirely to want of proper care. On mules the time has been too short for subsequent experience to speak. My weaned mules have supported themselves so far (except a little fodder) through the winter. Cotton oznaburgs have got into more general use. Cotton blankets, very partially yet, there is much reason to complain of apathy among our farmers, when they will not use that which is as good and as cheap, and their general interests benefited by it. It is a more profitable employment to try and improve the price of Cotton, than to complain of its depression, and that the effect will be produced is *certain*, so soon as each planter will do, what it is in his power to do *easily*. Cotton oznaburgs now sells at 10½ cents; Cotton blankets at $5 50 the pair. As to Cotton Bale-rope, I would say, that since these communications, many hundred bales of the late crop of Cotton have been so baled with it, and found to answer well, and there has been much made for the ensuing crop. It is now made with much more facility, being indeed an ordinary plantation operation. Many difficulties attending the first attempt cannot well be described, but will yield to the natural suggestions of remedy of any one, whose attention is drawn to it. I have found most in making the strands twist equally, and the remedy has been to see that the band bore equally on all the spindles, and covering it with pitch. I herewith send you a rough draft of the machine (that may be kept at your office for inspection), with minute details, and

will give any further information desired, with pleasure.—Cotton bagging I expect to try on the ensuing crop, and if it answers, you shall hear the result.

AN OBSERVER.

Note, by the EDITOR.

An Engraving of the Machine here alluded to, will be published in the next number, together with the Address to the citizens of Kershaw District, No. 2.—No 1. succeeds this article. These are the two pieces to which an "*An Observer*" alludes, and which, at the time, were published in the "*Camden Journal;*" being so intimately connected with the subject matter of "*An Observer's*" communication, we have placed it immediately below.

No. 1.

On the Raising of Sheep and Mules.

[COMMUNICATED FOR THE SOUTHERN AGRICULTURIST.]

To the Citizens of Kershaw District!

It has become the duty of the Committee under the resolutions adopted at the Anti-Tariff meeting of this district, to point out and recommend such investment of capital, and economy of the means of the agricultural classes they think judicious, and, as one that may be entered into profitably with least change of their present pursuits, as requiring the use of little other capital than labour, and as peculiarly adapted to the general condition of the farming interests of this district, they recommend the raising of sheep. They may be procured in any numbers, at low prices. Our Sand Hill wood-land pastures are abundantly provided with suitable herbage, (the sheep more than any other domestic animal living on herbs and buds,) where they may remain till near Christmas—then kept at or near home, and fed, in severe weather only, on peas in the haum or shattered fodder. They may again be returned to the woodland pastures, by the middle of March, or as soon as the earliest vegetation puts forth in the Spring. The peas in the haum necessary to make one bushel of shelled peas is believed, in

common winters, to be equal to the support of eight or ten sheep; and it is very certain there are many flocks that maintain themselves throughout the winters, without any feed but such as they procure themselves. The ordinary coverings in the farm yards are generally sufficient, but if not, low forks covered with rails in the form usual for potato houses, or houses made with corn tops, as is common among us, would answer well. A rye lot is indispensible for the ewes and lambs, and an acre of good rye would be sufficient for eight or ten ewes. The calculation each person will make, where very poor land is planted. A good rye lot should be seeded in September; October or November will do. Strong land should have two bushels to the acre. Sheep are best on upland pastures; and the rot soon yields by changing them from wet swamp to dry uplands, and feeding on fodder, peas haums, &c. The greatest obstacle to the raising of sheep, is the number of useless dogs that are kept, and therefore attention is required. Where the size of the flock permits the expense, they should always be under the eye of a shepherd, and should be penned every night, so as to obtain the benefit of their manure, which is believed to be more than equal, with moderate littering and regular removal, to the expense and trouble of their keeping. A well selected flock of sheep, well attended to, would increase fifty per cent on their number annually, and under all the casualties they may be subject to, other than from want of ordinary care, would be still profitable. The Wethers have the finest carcases, make the best mutton, and yield the most wool, and should constitute a third portion of a flock. The males should be, not exceeding one to fifty in a large flock; and it should be an object to kill off largely, so as to keep the flock always young and thriving. The fair average produce of wool, now is, one and a half to two and a half pounds to each, and it would soon be three or four pounds. The best species is thought to be the long wooled sheep, and those having large sized bodies. There are among us some of the half breed broad tailed Tunis sheep, of which too little is yet known to speak decisively: but they are thought worthy of the trial, and are at the service of any desiring to get into the stock.

The foregoing is little more than a plain repetition of well known facts, but, like other well known facts, they need repetition to excite inquiry, and induce practice; and

it is earnestly recommended, as it requires only that which is in the power of every farmer to bestow—Suppose—

1000 Sheep to cost $1 50, each.	1500
800 bushels of peas in the haum, equal to 100 bushels of shelled peas, at 75 cents,	75
Pasturage that would cost nothing, but say,	25
Attendance, one man and two boys over, and under the age of full work,	75
50 acres of rye, rent of land, seed, &c. at $3	150
Total,	$1825
Produce 300 sheep at $1 50	450
3000 weight of wool, at 20 cents,	600
Total,	$1050
Or,	
300 Sheep butchered, at $2,	600
3000 weight of wool, at 20 cents,	600
300 skins, at 25 cents.	75
Total,	$1275

Subject to a deduction for taking to market, killing, selling, &c. Making all allowances for the difference between the calculations of the pen and the facts on the farm, it would still be profitable. There are thousands of acres of land to be procured at twenty-five cents the acre, and even that expense is not necessary. There will be sufficient lying waste, for many years, for all the purposes of those who may raise stocks.

The next subject to which your attention is called, is to the raising of mules—a subject of some importance, if you take into consideration the fact, that this District pays annually in *money* alone, between five and seven thousand dollars for mules, horses and hogs: that the Western States trade, with this State, annually, exceeding one and a half million of dollars, is chiefly in mules, horses and hogs; a trade more advantageous and more valuable to them, (as it gives a profit to the raiser of every mule, horse or hog, and is, therefore, divided among the indigent,) than the

profits that are gained by the few concerned in the culture and manufacture of hemp and bagging, but very little of which has been seen in this District since the late war. But to our subject. Every mule, according to the prices paid for some years past, is worth at a year old $50, and at two years old $75—and the assertion is made without the fear of contradiction, and your experience appealed to for its correctness, that they are more suited to the climate, more hardy, and more able to bear their work than either the Spanish, or the mules of the Western States. Mules are liable to as few diseases or casualties, are as easily raised, and with as little feed, as stock cattle. A brood mare will raise more provisions than will pay the rent of the land and the expense of its cultivation, and keep herself and colt well; and her colts, with ordinary plantation care, ought to pay for her in every two years. All who cannot keep more than one, will be compensated in the occasional inconvenience by the price of her colt, which is worth double a horse colt. The one is fit for work at two years, the other at four years; one is not hardy and requires feed, the other is hardy and requires none. Those who can afford it, will find it to their interest to keep many brood mares—it is only the first outlay of money which will be handsomely repaid. The conviction of the correctness of this statement has induced one of your Committee to keep several brood mares.

These statements, without being intended to be very accurate, are sufficiently so to demonstrate that our farmers ought to be engaged at once in sheep and mule raising, to increase as they find it profitable. All that is wanted is care and attention (and nothing valuable is to be acquired without them,) and it is therefore recommended by their fellow citizens and friends,

THE COMMITTEE.

Camden, October 18, 1827.

ART. VI.—*On the Embanking and Preparation of Marsh Land, for the Cultivation of Rice; by the late* JAMES C. DARBY.

"North Santee, December 20, 1827.

Dear Sir,—Agreeably to promise, I herein submit to you my usual and general proceeding, in regard to banking in, and putting in order for cultivation, Marsh-land, taken from a state of nature. Also the preparing of land of the above soil, which has been cultivated for a number of years; together with the tasks that each labourer is capable of performing daily at each—and at different sorts of labour, as ditching, cutting drains, and clearing out old ditches, &c. The reason of my observations being more particularly confined to marsh-land, is, my experience as a Rice Planter has been more extensive on that kind of land. Still the same arrangement and proceeding will answer every purpose, or as well, on timbered land, with a little a variation: and as relates to the tasks, there must be less given, as the labour is greater. A great deal depends, also, upon the situation of the land; for instance, where there is a considerable quantity of water, or stumps, roots, &c., all of which impedes the progress of ditching, whether tide-way or inland swamp. In such places less must be given, than where these obstacles are not to be encountered with; and in such cases, it would be well to reserve a few of the best hands, with their axes, grubbing-hoes, spades, &c. to assist those whose tasks have these obstacles, in removing them, as it is disagreeable to have broken work in ditching.

Where there is a piece or parcel of land to be banked in, it should be taken in, all in one piece or field, and subdivided after it is enclosed with a bank around it, into squares of about fifteen acres each, or if uneven, twelve acres will be enough, as land drains and flows much better and quicker in small squares. If you have no canal, let this be the first work done, commencing at the river or creek, where you intend draining your land to, that the water from each days work, may run off. First lay out your canal and banks, after clearing the way for them, the canal if for floating and flowing to be fifteen or eighteen feet in width, and the canal margins twenty feet at least; and the canal bank ten feet base. In marsh-land the day's work

will be for a man and woman to throw out and put upon the bank, seven hundred solid feet, and trim off the bank. After your canal is finished, or carried as far as you intend, then commence again on your ditching at the river, that the water may run off from each days work as before. I prefer five feet ditches, particularly inside ditches, and sloped to half the width at bottom, to what it is on the top, or surface: all river or canal margins twenty feet wide, and the banks ten feet base; and all cross bank margins, fifteen feet which makes the labour and putting the mud on the banks less than wider margins would do, and drains better. In banking in, land, I prefer carrying on, both inside and outside ditches at the same time. But should the tides interrupt, or you cannot spare the time, then carry on the outside ditch, and throw up the bank from the earth which comes from the ditch, which will prevent the tides from interrupting your inside ditching, and will make the work easier for the people, even in cold weather, in consequence of its being much dryer, and can then be carried on to an advantage at any season, as there will be very little water to interrupt the work. The most preferable time for banking in, land, is between laying the crop by, and the harvesting: as it is warm and the days longer, the work can be done with much more ease to the labourers. As soon as the land is enclosed with a bank around it, and you commence the inside ditching, there should be a trunk put down, to take off any water that may interrupt the work. After the land is banked up into squares, I would cut down the marsh, or whatever might be growing on the land; then clear the way for the drains on every quarter, say one hundred and five feet, and lay out the drains eighteen inches in width. They should be dug down at least two feet and a half deep; two hundred and ten feet is the days work to each hand, and each hand piles the mud he throws out, all the mud to be piled on the same side of the drain, I would then burn off the marsh, and clean it up; put it in planting order, and flow; keep the water on, until within from four to six days of your planting the land, as it will rot the grass roots and make much better planting, except it is too late in the season. If you can have it in order to flow by Februry, then burn it up and flood; but if not ready by that time, let it remain until within four or five days of planting; and even chop the growth down again

before you burn it, as the new land will be your last planting. There will be a considerable quantity of grass sprung up before you are ready to plant, and, in fact, you cannot expect a good stand of rice on new land, except it is in good order; and I do think, the reason so many make bad crops, from new land, is, that they plant it in a rough state. I have heard Planters say, that they only planted new land the first year, to get it in order to make a crop the next, the first year's crop being so trifling that it was not an object, worth their attention. I have almost invariably made two barrels to the acre, from new land, the first year's planting; but the reason is obvious—it is because I put my new land in better order before planting, than those who make less. New land does not require to be dug up before planting, until the third or fourth year. The second or third year after planting lay out and cut new drains on every half quarter, which makes the beds; let them be fifty-two and a half feet wide, including one drain in each bed. In cutting these drains, the task will be the same as before. It will now be time to scatter back the earth from the first drains, after putting all that lays near the banks on them, particularly where the banks are small and require raising. It is tedious to carry earth to the banks in that way, but it is a good job, and time well spent when it is done; the task here, depends altogether upon the distance it is to be carried; one hand will carry one quarter in length to the bank, from the end of the drain (and so on, in that proportion) and trim off the bank; the balance of the earth, to be put as near the centre of the beds as possible, in order to raise them highest in the middle, throwing the earth from each drain to its own bed, that an equal quantity may be put on each. I am aware that a great many Planters will, and do object to their land being taken in, or divided into such small squares, because it requires more labour in ditching and banking, and more trunks, but the trunks are not required to be so large: for instance, a trunk four feet wide and eighteen inches in depth, will be sufficiently large to flow a field of twelve acres in common tide-land; and for a fifteen acre square, the trunk should be five feet in width in the clear, and for a square of eighteen acres, six feet, or about that proportion. Whatever additional labour it may

take, in enclosing small squares, I am decidedly in favour of them, and that for many reasons: first, they flow quicker and drain quicker, and much better, and it is a certain fact, the better land is drained, the better crop it will produce, and of course the rice will be of a better quality, and the crop will be made with less labour, and with much more ease to the labourers. There is also another advantage in small squares, viz. in bird-minding. All canals through which land is to be flowed and drained, should be dug down at least two feet below low-water mark. All ditches should be carried down ten or twelve inches below low-water mark. All trunks which are put down for draining only, should be put to low-water mark: but where they are for flowing exclusively; they do not require to be put down so deep. All canals that are intended exclusively for draining should be dug down at least two feet below low-water mark, and a large trunk or flood-gate put down in the mouth of the canal, and the tides not to be let in, except on very particular occasions, until the crop is laid by, when you do not wish to dry the fields, &c. I should have observed in all cases where land is flooded it would be best to change the water occasionally, once in two or three weeks before planting as well as afterwards. I am not aware that I can throw any new light on the subject of taking in new land, ditching, banking, cutting canals, &c. but, such has been my proceedings, in regard to the foregoing, for several years. I have paid close attention to this subject, and have generally, and almost invariably succeeded in every point.

But to return to the preparation of land that has been under cultivation. As this is a work that is chiefly done in the winter and spring, and as it is frequently too cold to work in old ditches and drains, it is my rule to arrange the work accordingly, and as our lands require to be dug or ploughed up, only every other year, dig one-half one year, and the succeeding year, break up the other half of the plantation; if you can, break up your land early, say in December or January, the stubble does not require to be burned off—but otherwise it is best to burn it, as the time will be too short to rot the stubble before the planting season comes on. If your land is sufficiently drained, ploughing is preferable to digging, and the task in ploughing is one acre per day, and in digging up land where the

stubble is not burnt, three hands will dig a half acre ; when the stubble is burnt off, each hand will dig one quarter of an acre. I do not chop land after being dug except it is uncommonly rough—in that case, a half acre to the hand is a day's work. Where land is broken up with the plough, it is best to harrow it before planting. In all cases, whether the land is dug or ploughed, I flood the fields immediately as I finish, and keep it flooded for two or three weeks, (for it breaks down the sods) then dry the land for about three or four weeks, so as to expose it to the frost, &c., which mellows it and which makes much better planting, and even if it remains dry until you see the weeds and grass begin to spring up, it will be all the better. I approve of keeping land generally dry through the winter, but still, towards the spring, or when the time for planting is near at hand, and you see the grass springing up, it is necessary to flow the land to keep it down, or the grass will get ahead of the rice so far that the water will not destroy it.

In cleaning out old ditches and drains, commence first with the ditches, and that on neap-tides, that you may have less water to interrupt the work. The task or day's work cannot be pointed out or laid down very accurately, as it depends mostly upon the quantity of mud that is to be thrown out, and also the water that may interrupt, as well as the width of the ditches, &c. The task or day's work will be from one to four quarters to each hand per day ; and the same quantity that a hand throws out, is the work for a hand to put on and trim up the bank ; it is sometimes adviseable in cleaning out old ditches, and particularly where there is a great quantity of water to interrupt, to work the hands in gangs, that when they get one lot cleared out, the water can be drained from the next lot. In cleaning out drains, the same rule should be attended to, as in the cleaning out of the ditches. As regards the day's work, much depends upon the quantity of mud to be taken out—from four to ten quarters in length, and the mud should be thrown as near the centre of the beds as possible, in order to keep that part raised highest, and this will be the work of the hands that clean the drains out.

I ought to have observed, while writing of cutting canals and ditching, that all stumps, or any other obstacle,

should be particularly taken out, as it is much easier to remove them then, than it will be at a future time, but not to employ as many hands to each stump, as I once heard a gentleman say he had done, (fourteen,) that the one-half might relieve the other half, and the one stump to be the day's work of the fourteen hands. This was certainly throwing away time. All stumps that were not taken out when the ditches are first dug should be removed at the time the ditches and drains are cleaned out. I should have observed also, that the land you intend planting, without breaking up the stubble, should be burnt off, and the land flooded to float up any trash that may not have been burnt up clear. Take the dryest times for burning stubble, and a few hands will go over a great deal of land. I prefer burning early in the winter, or as soon as it is dry enough; it exposes the volunteer rice, so that the birds destroy more of it than they do when the stubble remains until late in the season.

In splitting out task stakes, for the purpose of laying out land, five hundred is the day's work; they should be five feet in length, and as nearly of one size as possible, and straight. One man and a boy will lay out forty acres per day in quarters. In trimming up banks, I should have observed that I prefer banks to have a great slope, at least three feet on each side, they are less liable to be washed down by the tides, or in windy weather, when the fields are deeply flooded.

All, or the greatest part of the work herein laid down, should be as nearly as possible accomplished, previously to the fifteenth of March, as that is the time to commence planting, and you will have very little time to spare to prepare land, &c.

I am, dear Sir, with sentiments of respect,

Your obedient servant,

JAMES C. DARBY.

To J. D. LEGARE, ESQ.

ART. VII.—*On the Cultivation of Beets (Beta Vulgaris,) by the* EDITOR.

The climate of the Southern States is so peculiarly adapted to the production of culinary vegetables, that all which are grown in either the more Northern or Southern hemisphere, can be cultivated among us. The common varieties grow with the greatest luxuriance, and amply repay the Gardener for his labour. There are a few which require somewhat more care, but even these, not as much as is necessarily bestowed on nearly all, in more Northern latitudes. The happy medium of temperature in which we live, will be found to possess many advantages. Our Spring and Summer months afford us a choice variety, and our Autumn and Winter permit us still to enjoy many of them. Whilst in other countries during the Winter months they are obliged to resort either to their cellars or frames, for their daily supply, we can grow in the open ground, without protection of any kind, Spinage, Cabbages, Cauliflowers, Broccoli, Carrots, Beets, Parsnips, Lettuces, Turnips, &c. and have each of them every day, during the whole Winter. But this is not the only advantage we possess over our less fortunate neighbours. Whilst they have it in their power to raise but one crop of each specific vegetable in the season, we can, with great ease, procure two from many of them (of course those are excepted which are forced under frames.) Thus situated, we might become the first Gardeners in the world, producing not only the very best of vegetables, but also the greatest variety, at any particular season of the year. Our vegetable market, it is true, is not surpassed we believe by any in the United States, but this is owing more to our climate than any exertion on our part. There are many vegetables which have been lately introduced, which are not to be met with among us, except in private gardens, there are also many new varieties of those in common cultivation, which surpass the old. In England, such is the attention bestowed on Horticulture, at the present day, that new varieties of some of the culinary vegetables are introduced every year, many of these are worthless, and soon disappear, but there are also many well worth the notice of the American Gardener. Our intercourse with that country is so constant and frequent,

that we can never be at a loss to obtain either correct information, respecting them, or the seeds, when required. But were we to make no addition to our present stock, yet we might add much to our comfort, by cultivating many of those which we at present possess, oftener than we do: thus affording a greater choice for our tables. Receiving our knowledge of gardening as we did that of agriculture, in the first instance, from Europe, we have been content to continue the practices then introduced, making only such alterations in the time of sowing as our climate absolutely demanded. We have, as yet, not entered with sufficient spirit into the pursuit—we have not ascertained what variety of fruits or vegetables can be cultivated among us, nor how often any particular one can be raised in a season.

There is scarcely a known fruit or plant of the Tropics, but which may be had in England, notwithstanding the unpropitiousness of her climate for such purposes. By the aid of her Conservatories and Hot-houses—her Frames and Walls, her Gardeners can, and do imitate the climate necessary for each of these. In these States, how little would be required for us to obtain all of these fruits. Hot-houses could be erected at trifling costs, and the attention necessary for them would not be great with us, we scarcely believe that any other than Conservatories would be necessary. During the whole of our Winter, we have not very many days in succession, which are cold and cloudy, and it would only be necessary in such days, (if necessary at all,) to light fires in these houses. If properly constructed, the heat obtained from the sun, during the day, would prove amply sufficient, and at times would render them too warm. For vegetables, and things of low growth Hot-beds and Frames would answer. For many things, merely screens would be necessary, to be used at night, or in the day during severe weather.

When we reflect on how much might be added to our comforts, nay, even to our luxuries, by a due attention to Horticulture, and at how little cost this might be done, both of time and labour; when we look abroad and see at what enormous expense many of the fruits and vegetables are grown, which, with us require so little; when we consider the great labour and care bestowed on them there, and think of the little which would be necessary here, of the perfection to which they are brought there, under all their disadvan-

tages, and of the scarcity of them here, where they find a climate so congenial to their habits, we cannot but regret that Horticulture, both as an art and science, should have received so little attention from us. Let us however hope better things, and let such of us as feel the necessity of the case, exert ourselves more and more in the cause, until we shall have succeeded in drawing the attention of the community to it.

We have been led farther in these remarks than we intended to have indulged ourselves. It was our intention merely to give a few directions for the cultivation of the Beet. We have selected this vegetable for the subject of the present article, in consequence of the near approach of the season for planting it, and moreover, because it is one of those to which we have alluded above, as capable of being grown more frequently than it is at present.

It is a rare thing to meet with a Beet in our gardens, except in the Spring of the year, and in our markets, only for two or three months; in the whole year are they to be seen during the Winter, and even until the crops sown in this and the succeeding month come into use, we are dependent on our Northern brethren for them, who kindly supply our wants in this respect, as they do with other *notions*, which they annually send out to us. There certainly can be little comparison between any vegetable fresh from the garden, and those which have long been taken up, packed in barrels, heated on board of vessels, and then stored in large bulk, either in a close room or cellar; yet, with such, and such only are our citizens supplied, during this period of the year; nor are they to blame, for none others are to be had. But certainly our market gardeners have not, in this, attended to their true interests.

The Beet, with us, may be grown, and had in perfection, almost every month in the year, but more especially from the month of December until the month of August; after that period, they will not be so fine, owing to the great heat of our Summer, but even then they may be had if the precaution is used of planting them in low situations, well drained. We will here, however, candidly state, that during these months, the crop is not certain, for the heavy falls of rain, which usually take place at this season of the year, followed as they generally are, by a very hot sun,

causes them to rot off near the surface. The young plants are also very liable to be destroyed by the cut-worms. We are aware that with many the cultivation of the Beet has been found difficult, and that many have ceased to attempt to raise it, supposing that there was something hostile to its growth in our climate. We have heard these objections urged not by those ignorant of the subject, and whose opinions therefore would be entitled to no weight, but by practical farmers, and by several gentlemen who had often endeavoured to cultivate them. We know not to what their failures were owing. We have never found any difficulty, and have raised them with as much ease as the Ruta Baga Turnip. And so far from our climate being inimical to them, we know positively that the reverse is the case. We believe that there will be but little found in our details of the cultivation, which is not already known, but as it may be of service to some, who are ignorant of it, or who have failed in their former attempts, we will proceed to give directions for the Spring-sown crop, and in a subsequent number, will furnish them for the Autumn.

There are many varieties of this vegetable, such as the Large-rooted, the Long-rooted, Dwarf, Turnip-rooted small red Castlenandari, Green-topped Yellow-rooted, &c. We will confine our remarks to those sold by our Seedsmen, as the Long Blood and Turnip-rooted Beets, as these are the only varieties cultivated among us, and as far as we have been able to ascertain, they are to be preferred to any of those enumerated above. The Castlenandari is said to be much esteemed in France, and to have the taste of a nut; we have not, as yet, been able to obtain the seed. We have at different periods cultivated most of those enumerated above, and prefer the Turnip-rooted, on account of its superior delicacy, earliness, and the greater ease with which it can be raised.

A light, deep and rich soil, is the best suited for the culture of the Beet; they should be sown if possible on ground which has been highly manured for some other crop, but should there be none of this description vacant, well-rotted manure may be used, and even fresh, in case of necessity, if proper care be taken *that the whole be turned under*, and not mixed through the upper soil. The objection to using manure, more especially in a fresh state, with this or any other long-rooted crop, is, that meeting with it

in lumps and detached parcels, the root is diverted from its proper course, and impeded in its downward progress: the consequence is, that instead of one long, large, straight and clean root, we often, under such circumstances, have many small ones, and numerous fibres, rendering it unfit for the table. The remedy for this is obvious, and it is rather surprising, that the cause of the forking of the roots being known, the remedy should not have been applied. It is simply to place the manure at such a depth, that the root may not reach it, and consequently not be diverted until it shall have grown to a proper length. This may be effected by spreading the manure on the surface, and with a *spade* turning it entirely under, completely reversing the soil, so as to place that which was on top together with the manure, at the bottom—care is required in this operation, that *all of the manure* be completely buried, and that none, by the carelessness of the gardener, be intermingled with the upper soil. Another method (and it is one which we have adopted for many years with considerable success,) is, after the ground is prepared, to make small trenches or furroughs, either with a spade, or, if there be ground enough, with the plough, and at the bottom of these to scatter the manure, level the surface, or raise it into ridgelets over the manure, and plant on these. This last, will be found most effectual, and for many reasons the best. By pursuing this plan, fresh manure may be used, though we would always prefer that which is partially rotted. In preparing the ground for a crop, care should be taken to have it well broken up, and made mellow, as deep as possible, the Beet sends its root to a great depth in search of food, and it ought not to be impeded by meeting with a hard and compact soil. If possible, let it be stirred eighteen inches deep, for it will generally be found, that all other circumstances being equal, that compartment which has been stirred the deepest, will produce the best crop. The spade is decidedly the best instrument for preparing the ground, but where a large quantity is to be raised, the plough may be used, and more especially if the ridge system be adopted. The usual method is, to have the ground, after being thus prepared, laid off into four feet beds—to plant two or three seeds every nine inches, in rows, a foot apart, these to be thinned out to single plants when about the size of a goose-quill. Such as are thinned out may be

transplanted to fill up the vacancies which may occur in the bed.

The remarks made above, respecting the forking of Beets, principally apply to the Long-rooted varieties. The Turnip-rooted (so called from its resemblance to the Turnip, in shape,) sends down a small root in search of food, and like the Turnip forms a bulb near the surface of the ground, there is, therefore, very little to be feared from its forming ill shaped roots, by an improper application of manure. Although we have been successful in beds, yet we prefer planting on ridgelets, which is done by making deep furroughs with the spade every twelve or eighteen inches, spreading the manure in the bottom, and forming small ridges above them. There are several reasons in favour of this plan: 1st. Less manure is required, which very often, among our farmers, is a matter of some consideration. 2d. Fresh manure can be applied. 3d. The forking of the roots is, in some measure, if not altogether obviated. And 4th. The roots can more readily expand than when sown on the level ground, where, in order that they may enlarge, the earth around them, must be pressed into a smaller space. The principal objection against this plan is, that in time of droughts, the plants suffer more than when on a level surface, but, we think, that the advantages are greater than the disadvantage, and therefore recommend the ridge system, especially if the ground be inclined to clay. I knew a Gentlemen, who could never raise Beets, until he adopted this method, and afterwards he had very fine roots, and found no difficulty. In manuring, we have used salt-mud alone, with great success, spreading it along in the drills as recommended above; this mud is such as is usually found at the head of salt-water creeks, having rather a little more of vegetable matter than that of the marshes, but fully as salt, being overflowed every tide. We prefer having a compost made of it with stable or other manure, which we think produces roots of as great size, and decidedly of a much finer flavour, than they are, when raised on manure alone, especially where an excess of manure has been used.

About the middle of January, or beginning of February, the first crop may be planted; the ground being prepared, commence by dropping two or three seeds every nine inches, (to be afterwards thinned down to one plant,) and

cover them about one inch deep. Should the weather be cold they will lay dormant, but should there be about that time, as we usually have, a spell of very mild, warm weather, the plants will show themselves in the course of ten or fifteen days. At this early stage, they are very tender, and should there be a frost they may be all killed, they therefore should be protected, if this be likely to occur, by some light covering. This need not be applied after they have advanced a little in their growth, as they then become extremely hardy. We have seen every leaf, except the heart-leaves on the plants, killed, and the Beets, as soon after as the temperature of the weather permitted, again sending out fresh leaves, and these plants afterwards produced very fine and large roots. The young plants should receive an early hoeing and earthing up, for they send up a part of their root above the surface of the ground, when they first come through, which being very tender, is soon injured by the wind twirling the plants around, and the sand blowing against them. If they are examined, they will be found very often unable to support themselves, and resting on the ground the outer parts of the root, entirely destroyed, and nothing but the woody fibres retaining; and these very often reduced to mere threads. We have seen them often completely severed, and the tops with their leaves laying on the ground near the remaining part of the plant. Before we had noticed this, we lost many, and gave the grub-worms the credit of destroying them; but, although the worms will destroy some, yet the wind will destroy many more, if they are not protected. This is done by earthing them up so high as to leave merely the heart leaves uncovered, it must not be neglected by those who wish to have regular and well-filled beds, and must be attended to early, or there will be little gained by it. The other part of the culture is simple enough; they must be kept clean from grass, and the earth mellow around them. If sown in January, they will, in all probability, be fit for use in May. Any time from the middle of January until May, Beets may be sown, but the late crops are not likely to be either so large or productive, owing to the extreme heat, and very often drought, which prevails during that season of the year.

PART II.

SELECTIONS.

ART. I.—*Outlines of Horticultural Chemistry, &c. By* G. W. JOHNSON, ESQ. *of Great Totham, Essex.*

[FROM THE GARDENER'S MAGAZINE.]

In the following attempt to illustrate the practice of horticulture, by demonstrating its scientific principles, and thereby holding out guides for future improvement, I am not at all prompted by the conviction that any arrangement of mine will produce splendid illumination, or that I have facts and views to adduce that will astonish by their novelty, or be powerfully beneficial by their importance: my humbler object is to combine known facts, and known scientific principles; to trace the regular procession from cause to effect; to represent horticulture as it is, a compound of science and art; to afford a theory to every practice, which by rendering practices rational makes them more impressive on the memory, and facilitates their improvement.

It is certain that a horticulturist should have a knowledge of botany, systematic and physiological; otherwise he will be unable to understand terms and observations that must occur in every well-written work on his art, to comprehend the nature and habits of the objects of his culture, or to render observations he may make intelligible to others, if even to himself. Chemistry is of as much, if not greater, importance to him; and to this science, as illustrative of horticulture, I shall chiefly confine my attention. Without a knowledge of it, many of the gardener's simplest operations must be unintelligible to himself, and consequently be casually performed; he knows nothing of them but what he has learned by rote, or stumbled upon by chance. As evidence of what can be effected by a combination of chemical and practical knowledge in the cultivation of the soil, we may quote the example of Lavoisier. He cultivated two hundred and forty acres in La Vendée, actuated by the beneficent desire of

demonstrating to his countrymen the importance of sustaining the art of cultivation on scientific principles. In nine years his produce was *doubled*, and his crops afforded one-third more than those of ordinary cultivators. It would be as supererogatory to dwell upon the importance of this improvement, as it is to dilate upon the distinguished station which horticulture maintains among the arts of life. A garden was the first habitation of man; it has ever since been a source of his purest pleasures, of his most healthful employment and sustenance. We ought to hail, with well-founded satisfaction, the gigantic strides which the art has made in the march of improvement during late years.

The political economist may view its improved diffusion among the poorer class, as an earnest or means of more important benefits. The labourer who possesses and delights in the valuable appendage of a garden to his cottage, is generally among the most decent of his companions; he is seldom a frequenter of the alehouse: and there are few among them so senseless as not readily to engage in its cultivation, when convinced of the comforts and gain derivable from it. When the peasantry of a state are happy and contented, the abettors of anarchy will cabal for the destruction of its social order in vain; for they will have first to efface the strongest of all human associations, home and its hallowed accompaniments, before the rustic will assist in the tearing of them from others, in the struggle to effect which he has nothing definite to gain, and all these flowers of life to lose. Of the taste for horticulture, so diffused among the higher orders of society, we have only to speak in a strain of commendation. It is from persons of cultivated minds, and beneath the fostering care of fortune, that improvements can chiefly arise; and no pursuit is more worthy of such patronage, "Nihil est melius," says Cicero, "nihil uberius, nihil homine libero dignius." (Nothing excels, nothing is more profitable, nothing more suitable for a man of leisure.) Many theoretical speculations must be demonstrated to be futile, many experiments will fail of the desired object, in the progress of investigation; but one happy result confers a benefit on mankind through remotest ages, every failure serves as a beacon for future travellers.

The subject of the present paper is *the root* of plants, its offices, the mediums in which it grows, the nourishment it obtains to its parent plant, &c.; consequently, it includes the consideration of soils, manures, &c.

The root is present in all cultivated plants. The truffle which, however, can scarcely be considered as belonging to cultivated vegetables, having hitherto defied all attempts to subjugate it, may be considered as consisting of nothing but root. A root is annual, biennial, or perennial. In the two former instances, if the individuals to which they belong be allowed to perfect their

seed, no care can protect their existence beyond the ensuing winter, however genial the temperature, &c., in which they are made to vegetate; but, if the ripening of seed be prevented, it is undetermined how long they may in most instances be sustained in life. I have known mignonette continued in healthy vegetation for four years with this precaution. In all roots, and under any mode of management, the fibrous parts (radiculæ) are strictly annual; they decay as winter approaches, and are produced with the returning vigour of their parent in the spring. Hence the reason that plants are transplanted with most success during the season of their decay: for, as the root almost exclusively imbibes nourishment by the mouths of these fibres, in proportion as they are injured by the removal, so is the plant deprived of the means of support; that sap which is employed in the formation of new fibres, would have served to increase the size of other parts. The size of the root I have always observed to increase with the poverty of the soil in which it is growing. Duhamel found the roots of some young oaks in a poor soil to be nearly four feet long, though the stem was not more than six inches. The cause of this is evident: the nourishment which is required for the growth of the plant, can only be obtained by an increased wide-extending surface of root, and, to form this, more sap is often required than the plant, owing to the poverty of the earth, can obtain to itself; in that case a soil is sterile, for the plant must evidently perish. Every one may have noticed this familiarly instanced in Pòa ánnua growing on a gravel walk, its stem minute, its root a mass of widely extending fibres. A root always proceeds in that direction where food is most abundant; from a knowledge of this fact, we should be circumspect in our mode of applying manures, according to the crop and object we have in view. The soil in my own garden, being shallow, never produced a carrot or parsnip of any size; but almost every root consisted of numerous forks thickly coated with fibres: digging two spades deep produced no material advantage, the gardener applying as usual manure to the surface; but, by trenching as before, and turning in a small quantity of manure at *the bottom*, the roots always spindle well, grow clean, and have few lateral fibres. For late crops of peas, which mildew chiefly from a deficiency of moisture to the root, it is an object to keep their radiculæ near the surface for the sake of the light depositions of moisture incident to their season of growth; hence it will always be found of benefit to cover the earth over the rows with a little well rotted dung, and to point it lightly in. Plants are very much benefited by having oxygen applied to their roots, being found to consume more than their own volume of that gas in twenty-four hours; and, when applied by Mr. Hill to the roots of melons, hyacinths, &c. the first were found to be improved in flavour, the second in beauty, and all in vigour. (*Hort. Trans.*

vol. i. p. 233, and *Gard. Mag.* vol. i. p. 232.) Every thing, therefore, that promotes the presentation of oxygen to the roots of plants must be beneficial: hence we find that frequently stirring the ground about them promotes their growth; for, in proportion as the soil is loose, can the atmosphere easily penetrate it. Moist earth rapidly absorbs oxygen from the atmosphere, as Humboldt has demonstrated, but dry soil does not: this affords another reason for frequently stirring the earth about plants during the droughts of summer; for well pulverised soils admit the evening dews, &c., more freely than consolidated ones, and consequently dews will be deposited more within their texture, and moisture is more firmly retained in such pulverised soils, inasmuch as that they are not so much heated by the sun's rays, being more pervaded by the air, which, like all gases, is one of the worst conductors of heat. The decomposing parts of animals and vegetables contained in a soil are also highly absorbent of moisture; hence, the more freely the air is exposed to them, the more effectually will they be enabled to exert this power. By being freely exposed to the influence of the air, such substances are more rapidly decomposed, which leads to a consideration of the practice of exposing soils as much as possible to the action of the atmosphere by ridging, &c. When a soil is tenacious, or abounding in stubborn vegetable matters, as in heath lands, it cannot be too completely exposed to the action of the air; but, to light soils, which are in general deficient in organic decomposing matters, Chemistry would say that ridging is accompanied by evils more injurious than can be compensated by the benefits obtained: for such light soils are easily pulverised whenever occasion requires, are so porous as at all times freely to admit the pervasion of the atmosphere; and therefore, by this extra-exposure, the vegetable and animal remains are hastened in decomposing, and much of their fertile constituents evolved in the state of gas, or carried away by the rains, &c. without there being any crop upon them to benefit by them. Thus Theory argues, and Practice certainly seems to support in this instance her doctrines. Switzer, one of our horticultural classics, says: "Rich heavy ground cannot well be ploughed too often to make it light, and the better manure by killing the weeds; as light poor ground cannot be ploughed too seldom, for fear of impoverishing it." (*Ichnographia Rustica*, vol. iii. p. 237.)

We have seen that plants search after and acquire food by the agency of their roots; and the extremities of these appear to be the chief if not only parts employed in the intro-susception of all food not in a gaseous state, for M. Duhamel observed that that portion of a soil was soonest exhausted in which the greatest number of the extremities of the roots were assembled. (*Physique des Arbres*, vol. iii. p. 276.) This explains why the fibrous points of roots are annually renewed, and the caudex extended

in length; by these means they each year shoot forth into a fresh soil, always changing their direction to where most food is to be obtained. If the extremity of a root is cut off it ceases to increase in length, but enlarges its circle of extension by lateral shoots. It is by their extremities, then, that roots imbibe food; but the orifices of these are so minute, that they can only admit such as is in a state of solution. Carbon, reduced to an impalpable powder, being insoluble in water, though offered to the roots of several plants, mingled with that fluid, has never been observed to be absorbed by them; yet it is one of their chief constituents, and is readily absorbed in any combination which renders it fluid.

Roots, then, obtain such nourishment to plants from a soil as is in a gaseous or liquid state; we may next, therefore, consider what constituents of soils are capable of being presented in such forms. Water can be the only solvent employed; indeed, so essential is this liquid itself that no plant can exist where it is entirely absent, and on the other hand many will exist with their roots in vessels containing nothing but distilled water. Plants with a broad surface of leaves, as mint, beans, &c., I have always found increase in carbonaceous matter, whilst thus vegetating; but onions, hyacinths, &c., with small surfaces of foliage, I as invariably have found to decrease in solid matters: the first obtain nourishment by decomposing the carbonic acid gas of the atmosphere, the latter do so in a much smaller proportion; hence the reason why the latter are so much more impoverishing crops than the former, inasmuch as that they acquire nearly all their solid matter by means of their roots. These observations explain the conflicting statements of Saussure and Hassenfratz on this point: the former experimented with broad-leaved plants, the latter on such as have small foliage; the first maintained that plants increase in solid content when their roots are supplied with water only, the latter denied the fact. It has been advanced that water is the sole food of plants; but all experiments are inconclusive which are presented as supporting the theory. In the first place, all waters contain earthy, saline, and organic matters; even distilled water is not pure, as Sir H. Davy has proved, and rain-water Margraaf has demonstrated to be much less so. No plants, growing in water only, will ever perfect seed; and the facts, that different plants affect different soils, and that a soil will not bear through a series of years the same crop, whereas it will a rotation of different ones, demonstrate that they each take different kinds of food from the earth, and not that universal one, water, which is ever present and renewed.

Silica, or the pure substance of flint, is present in all soils; it is soluble in water, requiring one thousand times its weight of this liquid to dissolve it (*Kirwan's Mineralogy*, vol. i. p. 10); it is found in many plants, and in all the grasses that have been

analysed. Alumina, or the basis of clay, present in all soils, is so soluble in water as to be inseparable by the filter, and is much more so when any of the acids are present (*Sennebier's Physio. Veget.*, vol. iii p. 18); it is found in plants in minute quantities, especially in the grain of barley, oats, wheat, &c. (*Schræder in Gehlen's Journ.*, vol. iii. p. 525). Lime is found in almost all soils; it is easily soluble in water, and there is but one plant which is known to contain none of it as a constituent, the Salsola *Sòda. (Ann. de Chimie*, vol. xviii. p. 76). Magnesia, generally present in soils, is soluble in water, and is found in many plants. Iron is present in all soils, in all natural waters, and in all plants. Manganese is found in some soils; it is soluble in water containing acids, &c., and is found in a few plants. But none of these, in a state of purity, either simply or combined, have ever been found capable of perfecting a plant through all its stages of growth, when moistened with distilled water; the contrary was the case, however, when the water contained in solution vegetable or animal matters, as the dung of animals. Now these matters contain carbon, hydrogen, oxygen, nitrogen, and various salts: the three first are absolutely necessary for the existence of all plants, every part of these is composed of them; nitrogen is found in some plants; and the importance of salts to vegetation is demonstrated by the facts, that clover will not flourish where there is no sulphate of lime, that nettles follow the footsteps of man for the nitrate of potass, which always abounds near the walls of his habitation, and that marine plants linger for the common salt of their native haunts. Salts of some kind or other are found in every species of plant, but none that have not also been detected in soils. During decay, vegetable and animal matters exhale various gases. Carbonic acid, hydrogen, carburetted hydrogen, ammonia, &c., are of the number; all of which have been applied to the roots of plants with great benefit by Sir H. Davy and others.

(To be continued.)

ART. II.—*Observations on the Silk Worm; by* W. B. BUCHANAN.

[FROM THE AMERICAN FARMER.]

The success which has attended my experiments on the silk worm, and a desire to promote the introduction of this important branch of industry into a country so peculiarly adapted to it as ours, are my inducements for offering the following observations,

derived principally from my own experience; aided by a valuable pamphlet, lately sent me from France. I would feel great diffidence in this undertaking, after the many treatises that have be n published on this subject, were it not for the frequent applications that are made to me for information respecting it, by persons who have doubtless read most of these essays, but who do not appear to have derived from them much practical instruction. Perhaps they have been too elaborate, sometimes too fanciful; giving an air of difficulty to a very simple occupation, or treating as a subject of taste and amusement, what is essentially a matter of business. The silk worm is a hardy, vigorous, ugly insect. The housewife, with her brood of early chickens, liable to sicken in the dew, or perish in the frost, has many more perplexities to encounter than this sturdy glutton, whose only want is food, will occasion her; and the curious will find a higher gratification in observing the labours of the bee. But, on the score of profit, and to the females especially on the small farms throughout our country, I am persuaded, this insect would prove a valuable acquisition; as it has already done to their more provident country-women in the north; demanding only the attention of their leisure hours during six weeks of the year, and requiring no further capital than nature has furnished them, in the fine mulberry trees with which she has stocked our forests. Once understood, which it cannot fail to be, after one season of experiment, this culture would form a very lucrative branch of household industry; and, without interfering with the poultry yard, or dairy, become a more important source of revenue. In the silk countries of Europe, every cottage has its stock of insects, which are set to work in the spring, and when their labours are ended, their produce finds a ready sale in the manufacturing districts. It is the province of the agriculturist to furnish the raw silk, either in cocoons as the worms leave it, or in skeins if he have the means of reeling it, as it is of the planters to supply us with cotton, or the grazier to produce his wool. Even now, this precious material is demanded in the Eastern States, where extensive preparations have been made for manufacturing it; and I would very soon avail myself of the facilities I have of establishing machinery for this purpose at Warren, could I see a prospect of a sufficient supply of raw silk to employ it. To obtain this, a very general co-operation of our agriculturists will be necessary; and my object is, to engage them to make the experiment in their families, during the approaching season, in the hope that they will find it to their advantage, to follow it more extensively hereafter. With this view, I have entered into the minutest details of the habits and wants of the insect, and laid down such rules for its treatment, as cannot, I think, be misapprehended.

I have avoided giving any calculations as to the quantity of silk produced by a given number of the insects, or the profit likely to accrue to the cultivator. Indeed, I have no certain information on these points, and they are still doubtful, even in Europe, where the business is so much better understood; besides, they there compute the eggs by weight, and it would be impossible to apply these estimates to the small number of insects employed in an experiment. It is merely important for us to ascertain, that the insect will thrive in our climate, that suitable food can be obtained for it, its management easily acquired, and we shall then enter upon it as a branch of business with more confidence.

To those who are really disposed to make the experiment, I will cheerfully present a small quantity of eggs, if they will leave their address at the Warren warehouse in Hanover-street, and as these increase three or four hundred fold in a season, a stock may soon be obtained by such as wish to continue it. This will afford them an opportunity of becoming acquainted with the culture. They may form some idea of the number of insects they can attend; what quantity of silk will be produced, and whether this addition to their cares, will be sufficiently rewarded.

My experiments last summer, with about fifteen hundred worms, though made under every disadvantage, were very satisfactory. In the hurry of other engagements, they were forgotten until the season was far advanced, and the leaves had become too old to afford them the tender nourishment they require in the early periods of their existence. On opening the paper which contained the eggs, and which I had deposited in my cellar to prevent their hatching, I found the insects were beginning to intrude themselves; thus shewing how easily this process may be managed, and that the ordinary temperature of the season is sufficient to effect it, without resorting to the artificial and troublesome measures pointed out by most writers on the subject. Mine had been but a few hours in my sitting room, before the whole business was accomplished. I was soon compelled to remove them, (not having a spare room in my house to appropriate to them,) to a dark and badly ventilated chamber in the village, where they were subjected to continual noise and interruption. They had, too, to endure frequent changes of temperature, as we had late frosts and much wet weather; and there was no fire-place in the room to afford the means of warming it. Thunder, said to be pernicious to them, did mine no njury, though they had two tremendous storms to encounter. In a word, they seemed to require nothing but food, and as the mulberry trees in the neighbourhood furnished this in abundance, they flourished beyond all expectation; yielding me at the expiration of four weeks and a half, three pecks of perfect cocoons,

(so their balls of silk are called,) and a vast quantity of eggs for a future season. These cocoons, have been pronounced by persons from the silk districts of France, and accustomed to this business, equal to any they have seen in that country, and they approve highly of the quality of the silk reeled from them, leaving no doubt in my mind, of the practicability of bringing this valuable material into general culture in our state.

I am putting up a small building, sufficient to accommodate as many insects as the mulberry trees, which are very numerous here and in the neighbourhood, will supply with leaves, and will also feed some with the white mulberry, keeping them distinct, to ascertain which is the most proper food for them. I will also keep a strict account of the expense of attending them, the quantity of silk they produce, its quality and value, and communicate the result hereafter, should the zeal displayed in the pursuit this season, induce me to believe they will be thought interesting.

The prevailing opinion seems to be, that the white mulberry tree furnishes the most suitable food for the silk worm, and yet I cannot find a single writer who gives it a decided preference, while many admit it to be a matter of doubt. The author of the French pamphlet I have alluded to, merely imagines it may have a favourable influence on the quality of the silk. The black has many advocates. In some countries, the various kinds are used indiscriminately, and even the *morus papyrifera* or paper mulberry, the least inviting in appearance of all, is frequently resorted to. My own experience induces me to believe, that the red mulberry, which is a native of our forests, and which differs very little from the black of Europe, will answer perfectly well. There cannot be a more healthful or succulent leaf than that which it produces, and those who have not the exotic kinds convenient, will run no risk in substituting it. It will afford them the opportunity at present, of becoming familiar with the habits and treatment of the insects, and allow time to make plantations of the other descriptions for future seasons.

As soon, therefore, in the spring, as the weather becomes mild and settled, and the buds of the mulberry tree begin to expand, the paper on which the eggs are deposited, hitherto kept in a cool cellar, may be laid, loosely folded, in a situation affording a temperature of 60 or 65 degrees, for two or three days; and which may be gradually increased to 80, as the leaves are pushed forward or retarded by the season. Where there are but few eggs, these variations of temperature may be attained, by removing them to different parts of the apartment; always avoiding the direct rays of the sun; by wearing them about the person, or by placing them in a kitchen if necessary to hasten their production. Generally, I should imagine the temperature of the season would be sufficient, and if favourable to the

advancement of the leaf, would probably bring forth the insect in proper time. This is, however, a critical point in the management of the silk worm, and perhaps the chief obstacle our capricious climate opposes to it. The late frosts to which we are liable, and which sometimes destroy the leaves of the hardiest forest trees after they are completely expanded, might unexpectedly deprive the stock of sustenance, and they must perish. But this risk is to be incurred with many other productions, and the advantage here is, that though the disappointment may be great, the loss is inconsiderable. The eggs cost little, and the insects, at this early period, have not had labour enough bestowed on them, to make them valuable.

The eggs being properly matured, the insect will come forth in the form of a small black ant, full of life and activity, and eagerly demanding food; but if it be observed that only a few have made their appearance, it will be better to let them remain, until a general production has taken place, and even to perish if a considerable interval should elapse before this occurs. The first worms are generally of little value; and it would be difficult to regulate their treatment with those that come later. In large establishments, this is accomplished by placing the insect first obtained, in a cool situation, and feeding them sparingly, to retard their growth; while the late ones are allowed more heat and food, that they may overtake them, and thus go through the different stages in the same time. This, in a mere experiment, would afford too much trouble; and it is, therefore, better to lose the very forward eggs, and to throw away the very backward ones, or to keep the worms produced from the latter distinct from the general stock. It is also recommended, where the business is extensively engaged in, to scrape the eggs from the paper on which they have been deposited, and to place them on pewter or earthen plates, preparatory to their hatching, after they have been washed in very pure water and carefully dried; but this trouble appears unnecessary, and the danger of breaking or losing them, renders it unadvisable when the quantity is small.

(To be continued.)

Art. III.—*On Leaves for Manure.*

[from the new-england farmer.]

Mr. Editor,—The changing foliage warns the farmer again to make ready for gathering his supply of leaves; the comfort of his cattle requires it; and a clean abundant litter, to make warm

nests for his hogs, will assist much to their fattening. These advantages would pay for the trouble of getting in leaves; but when their value as a manure is well considered, it seems that no one would overlook a way so easy to benefit himself. That leaves manure the land, is not a new doctrine; it is as old as the world. Their yearly fall, and the occasional fall of timber, are the ancient ordinance, by which the happy soil which we till, was prepared for cultivation; whether its primitive sweetness and virtue has been impaired by injudicious husbandry, and are to be reclaimed, or whether the owner wishes to preserve it entire, the means are the same: a steady industry to provide manure, in such proportion, as always to exceed somewhat the mere requirements of the crops.

Of these means, the gathering of leaves where woodland is near, is the easiest and the most profitable; it is much attended to in the most cultivated parts of Europe. The Swiss, who have to support a thick population upon a rough and rocky soil, gather leaves wherever they are to be found, in their apple and chesnut orchards, by the road side, and in their small cities, the privilege of raking up the leaves from the public walks, is paid for by the farmers. In Flanders they gather great stocks of them, and their beautiful cattle and horses have the benefit of most abundant litter.

I am urged again, Mr. Editor, to these remarks, by the benefits which I have received from the practice; I have endeavoured every season to get in more than before, and I hope soon, if the weather proves favourable, to secure a greater stock of them than ever I have yet. Well mixed with cattle dung, they are the most assured means of raising a good crop of potatoes, of superior flavour and excellence.

The gathering of leaves may be greatly accelerated by suitable arrangements; a cart with ladders fore and aft, and long slats of boards to go from ladder to ladder, to secure the sides and stakes, is the best adapted carriage. The leaves should be raked in small heaps, a sheet of tow cloth two yards square should then be laid on the ground, and the small heaps be raked into it; when full, a man ties the corners of the sheet and hands it to a boy, who keeps on the cart, and receives it; he unties the bundle and lets the contents go, and keeps treading all the while. In this way a load is soon obtained; and to the above tackling, some little brush may be added to the sides of the load to build it up, and hold on the leaves. I have tried to use baskets to load the leaves, but have found the above sheet to work easier and quicker, and in order to make it more durable, I have had a small rope sowed round the edge of it, and let out about eighteen inches at the corners, which makes it easier to tie, and secures the sheet from getting torn. Such a sheet will cost about one dollar.

In the use of leaves, the hogs excel, for whether as a litter in the covered parts of their stye, or whether thrown in moderate quantities in their yard, when miry, they soon work them, and secure them from the power of the wind; when used for littering cattle, it is absolutely needful to work them with their dung. When the floor is cleared in the morning, the dung, urine, and leaves should be well worked and chopped together with the shovel before they are thrown out on the heap; if it is not so done, the wind will surely take hold, and disappointment and disgust ensue. When so mixed, they will soon dissolve in the ground, and seldom any trace of them be seen in fall, when potatoes are dug.

With much esteem,

I am your friend and servant,

J. M. G.

Weston, Oct. 18, 1827.

PART III.

MISCELLANEOUS AGRICULTURAL ITEMS.

Bearded Rice.—In our excursion last summer, we met with this species of Rice at Stateburg, where a considerable quantity was sown. It is said to have been found on the Prairies, and was described to us as being superior to the Gold-seed Rice, the variety now most esteemed by our Rice Planters. This superiority consists in being heavier, (ten grains of the Bearded being equal to fourteen of Gold-seed,) whiter, more easily separated from the chaff, and more productive. It was brought from Mississipi, where it is in high repute, and commands a high price. We were presented with a small quantity of it, and certainly the appearance of the grain was very fine. It is larger than the Gold-seed, and has a beard projecting from the point. We showed it to several Rice Planters, who were highly pleasedwith its appearance. Treated as a high land grain, it is said to be very productive. Having had it but one or two seasons, the Gentlemen there could not speak positively of its properties from their own knowledge, but we hope to be favoured with an account of its growth and

product the last season. What we saw of it was sown partly on high and partly on low ground, well drained. A small quantity of this Rice was also sown last year by one of our Planters, in his rice field, and subjected to the same treatment which his crop received. He is highly pleased with it, and thinks it an acquisition. It will require several years experience, however, before a just estimate can be formed of its value.—*Ed. So. Ag.*

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Chinese Flat Peach.—This most curious of fruits, introduced from China by the Horticultural Society of London, and figured and described in their transactions, may be considered an anomaly of its species. The fruit is described as two and a half inches wide, and only eleven-sixteenths of an inch through from the stem to the outer side, and the existence of such a fruit has always been doubted until actually received from China. Both the external appearance of the fruit, and the pit so singularly compressed in its form, would seem to be the result of art rather than of nature. It is represented as being an early peach. About twenty trees are in possession of the author, which have been inoculated from the original introduced by himself.—*Extracted from Prince's Treatise on Horticulture.*

QUERIES.

Dear Sir,—As you have assigned a portion of your pages to queries, will you oblige me by inquiring, whether the Chickasaw Peas, mentioned in 5th number of the *Southern Agriculturist*, by Mr. Herbemont, have been found to answer the valuable purposes there mentioned. I more particularly want to ascertain whether it yields good fodder, what quantity it yields to any given space, and what superiority (if any) it possesses over the common Cow Pea. A. B.

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Mr. Editor,—I understand that some of our best Planters in the Up-country, are in the habit of planting the whole of their crop of Potatoes from what is called "Sprouts," that is, the vines when about six or eight inches long. I have never tried it myself, but from what I have heard respecting this practice, I think there must be considerable advantage in pursuing it. If any of your Subscribers will inform me of the best method of setting a crop in this way, they will greatly oblige me, and I promise you, Sir, in return for this, to answer any query which may appear in your work, which I may be able to do.

A Constant Reader.